U.S. Army Corps of Engineers
Omaha District

Final Technical Project Planning Memorandum
Mountain Home Air Force Range No. 1
FUDS Property No. F10ID0140

Site Inspections at Multiple Sites, NWO Region
Formerly Used Defense Sites
Military Munitions Response Program

Contract No. W912DY-04-D-0010
Delivery Order No. 003

August 2008

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Final Technical Project Planning Meeting Memorandum

Site Inspection
Mountain Home Air Force Range No. 1
FUDS Property No. F10ID0140

Formerly Used Defense Sites
Military Munitions Response Program

Documentation for Technical Project Planning Meeting
Meeting Location: Idaho Department Environmental Quality
1410 N. Hilton
Boise, Idaho
Held April 22, 2008

Coordinated by:

U.S. Army Corps of Engineers

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Table of Contents

Table of Contents (Cont.)

Table of Contents (Cont.)

List of Figures

List of Tables

Draft Worksheets

List of Acronyms and Abbreviations

ºF	degrees Fahrenheit
AFR	Air Force Range
AOC	area of concern
ASR	Archives Search Report
bgs	below ground surface
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOI	Department of the Interior
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ft	foot or feet
FUDS	Formerly Used Defense Site
GGR	Ground Gunnery Range
GP	general purpose
GPS	global positioning system
HE	high explosive
HRS	Hazard Ranking System
ID	Idaho
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IEP	Important Ecological Place
INPR	Inventory Project Report
lb	pound
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
MIS	multi-increment sampling
MMRP	Military Munitions Response Program
mph	miles per hour
MRSPP	Munitions Response Site Prioritization Protocol
NDAI	No Department of Defense Action Indicated
PBR	Precision Bombing Range
RAC	Risk Assessment Code
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RI/FS	Remedial Investigation/Feasibility Study
Shaw	Shaw Environmental, Inc.
SHPO	State Historic Preservation Office
SI	Site Inspection
SLERA	screening level ecological risk assessment
SSWP	Site-Specific Work Plan

List of Acronyms and Abbreviations (Cont.)

TNT	2,4,6-trinitrotoluene
TPP	Technical Project Planning
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
UTM	Universal Transverse Mercator
UXO	unexploded ordnance

Administrative Information

The Technical Project Planning (TPP) Memorandum is one in a series of documents used during the Site Inspection (SI) process to document the information collected and processes used to evaluate Formerly Used Defense Sites (FUDS) for the possible presence of munitions and explosives of concern (MEC) and/or munitions constituents (MC). TPP meeting information provided in the Memorandum reflects both the original version of information shared with meeting participants, as well as changes/updates to site-specific information obtained during the TPP meeting.

The TPP meeting for the former Mountain Home Air Force Range (AFR) No. 1 was conducted on April 22, 2008 at the Idaho Department Environmental Quality (IDEQ) offices located in Boise, Idaho (ID). Representatives from the U.S. Army Corps of Engineers (USACE) – Omaha Design Center and Seattle District, IDEQ, City of Pocatello, and Shaw Environmental, Inc. (Shaw) attended. A representative from the U.S. Environmental Protection Agency (EPA) Region 10 attended via conference call.

The TPP Memorandum documents discussions for the TPP meeting and includes the sections described below:

- **Administrative Information:** includes meeting logistics, the list of attendees, and a summary of the meeting;
- **Site Inspection Objectives:** provides the goal and objectives of the SI, roles and responsibilities, the SI process, and the TPP process;
- **Background Information:** includes site and project history, area physical setting, a summary of previous environmental work, and an introduction to the areas of concern (AOCs) addressed by the SI;
- **Conceptual Site Model (CSM):** used to identify environmental attributes, potential human and ecological receptors in the area's environment, and the relationships between these factors;
- **Proposed Field Investigation:** used to describe the reconnaissance to be performed, the type and quantity of samples to be taken, and the analytical methods to be used for characterizing the AOC;
- **TPP Notes and Data Quality Objectives (DQOs):** used to capture project and site-specific information as discussed during the TPP meeting to ensure that the necessary and appropriate information is shared among meeting participants, and that meeting participants concur with the identified goal, objectives, and approach used to complete the SI process; and
- **Worksheets:** includes the Site Information Worksheet, Draft Munitions Response Site Prioritization Protocol (MRSPP) Data Gaps, and Hazard Ranking System (HRS) Data Gaps.

Technical Project Planning Meeting
Summary of Agreements

A TPP meeting for the Mountain Home AFR No. 1 was conducted on April 22, 2008 at the IDEQ offices located in Boise, ID. Representatives from the USACE, IDEQ, City of Pocatello, and Shaw attended, with a representative from EPA Region 10 participating via conference call. This meeting was held in conjunction with TPP for the Pocatello Ground Gunnery Range (GGR). A visit of the former Mountain Home AFR No. 1 was not conducted as part of the TPP. The City of Pocatello representative attended the TPP meeting primarily for the Pocatello GGR TPP discussion.

The TPP meeting was initiated by Mr. John Miller (USACE), who provided an overview of the MRSPP and FUDS SI process. Mr. Andrew Ellison (Shaw) facilitated the remainder of the meeting by presenting site-specific information, summarizing the CSM, identifying AOCs, discussing potential MEC and associated MC, and presenting proposed MEC reconnaissance and MC sampling. DQOs were reviewed and discussed. Mr. Ellison initiated his discussion by presenting preliminary results of the Bruneau Precision Bombing Range (PBR) No. 2 SI. This discussion was relevant since the Mountain Home AFR No.1 and Bruneau PBR No. 2 ranges are similar.

The following issues, agreements, and items for further review were discussed.

Stakeholders – All parties in attendance agreed that the Bureau of Land Management (BLM) should be included in the TPP process since the BLM is the sole owner of land within the FUDS. The BLM had agreed to attend the TPP meeting but was unavailable due to other commitments. The USACE indicated that the BLM will participate by reviewing TPP, SSWP, and SI reports.

Area of Concern – All parties agreed that the AOC within the former Mountain Home AFR No. 1 consists of the bombing range represented as a 6,000-foot (ft) -diameter circle with the bombing target at the center of the circle.

Rights of Entry – The USACE is in the process of obtaining right of entry (ROE) from the BLM for the Mountain Home AFR No. 1 and other FUDS within the State of Idaho. It is anticipated that the ROE will be obtained by the time field work is to be conducted at the former range.

Conceptual Site Model – All TPP participants were in general agreement with the CSM for the AOC. It was agreed that soil, surface water (if present), and sediment are potentially completed human and ecological exposure pathways. Groundwater is not considered a complete exposure pathway based primarily on the lack of wells within the area of the range.

Important Ecological Place (IEP) – All TPP participants agreed that the Mountain Home AFR No. 1 AOC does not qualify as a IEP. The IDEQ had no further comments regarding IEP status for the AOC after review of the Draft TPP Memorandum.

Human Heath and Ecological Screening Values – MC will be evaluated using screening values as described in the DQOs. The IDEQ declined to approve the screening values without internal review. The IDEQ had no comments on screening values following review of the Draft TPP Memorandum.

MEC Hazard – All TPP participants agreed that a potential MEC hazard exists at the Mountain Home AFR No. 1 AOC. It was agreed that M38A2 practice bombs, practice bomb spotting charges, and AN-M30 general purpose (GP) high explosive (HE) bombs and associated fuzes may have been used and may occur on the range. The use of this range was similar to that of the former Bruneau PBR No. 2 range. Although the surface of the area has been cleared, it is understood that unexploded bombs may be present below the land surface.

MC/Sampling of MC – All TPP participants agreed that MC consist of explosives and metals (antimony, copper, lead, and zinc). Initially, the USACE suggested only sampling for explosives since metals of significant concentrations have not been detected at most other bombing ranges investigated under the FUDS program. The IDEQ preferred to have the specified metals included in the MC list and the USACE agreed.

All TPP participants agreed to use the multi-increment sampling (MIS) approach for the collection of soil samples. Samples from a total of five decision units will be collected from within the AOC. It was agreed that the decision units will cover the AOC from the center of the bombing target to a distance of 1,000 ft from the target center. It was agreed that the highest concentration of MC would likely occur within this area of the range.

The TPP participants agreed that up to three ad hoc soil samples will be collected if disturbed soils (e.g., craters, stained soils) are observed. These samples will be collected as multi-increment samples from decision units to be defined in the field that encompass the disturbed soil area.

The TPP participants agreed to the collection and analysis of one upgradient and one downgradient set of surface water and sediment samples from Vinson Wash, which flows thorough the bombing range AOC. It was understood that surface water samples may not be obtained since the wash may be dry at the time of field sampling.

Background Sampling – One background soil sample will be collected as a multi-increment sample. The background soil sample will be analyzed for metals only since explosives are not expected to occur naturally. The background sample will be located in the northern portion of the FUDS outside the boundary of the 6,000-ft-diameter bombing target AOC. The background concentration of a given metal for DQO purposes will be equal to three times the value of the soil sample. The background soil type will be similar to that observed within the AOC.

Data Quality Objectives – The proposed DQOs and decision rules for the Mountain Home AFR No. 1 were discussed and revised to the following:

Objective 1: Determine if the site requires additional investigation or can be recommended for No Department of Defense Action Indicated (NDAI) based on the presence or absence of MEC.

DQO No. 1 – Using trained UXO personnel and hand-held magnetometers, a visual search of the AOC will be conducted searching for physical evidence to indicate the presence of MEC (e.g., craters and ground scars, MEC on the surface, munitions debris [MD], and soil discoloration indicative of explosives). The visual search will consist of a meandering path within the AOC. The following decision rules will apply:

- If no evidence of MEC is found, the AOC will be recommended for NDAI relative to MEC.
- If evidence of MEC is confirmed, the AOC will be recommended for additional investigation.
- If there is indication of an imminent MEC hazard, the site may be recommended for a removal action.

Objective 2: Determine if the site requires additional investigation or can be recommended for NDAI based on the presence or absence of MC above screening values.

DQO No. 2 – Soil, sediment, and surface water samples will be collected and analyzed. Analytical results will be compared to screening values for human health risk assessment, and to background values for naturally occurring substances. The following decision rules will apply:

- If sample results are less than human health screening values for all decision units, the site will be recommended for NDAI relative to MC.
- If sample results exceed both human health screening values and background values for any of the decision units, the site will be recommended for additional investigation.
- If sample results do not exceed human health screening values but do exceed background values for any decision unit, additional evaluation of the data will be conducted in conjunction with the stakeholders to determine if additional investigation is warranted.

Mountain Home Air Force Range No. 1 and Pocatello Ground Gunnery Range
Technical Project Planning Meeting
April 22, 2008

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1.0 Site Inspection Objectives

1.1 Goal

- The USACE is conducting SIs of FUDS properties to determine if any MEC or related MC are present on property formerly owned or leased by the Department of Defense (DoD).

1.2 Objectives

- Determine if a site requires further response action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) due to the presence of MEC or MC.
- Collect minimum information needed to:
    - Eliminate a site from further consideration if:
        - No evidence of MEC and/or
        - Concentrations of MC in site media are below background or below risk-based screening levels;
    - Determine the potential need for removal action or initiation of the Remedial Investigation/Feasibility Study (RI/FS) if:
        - Evidence of MEC identified and/or
        - Concentrations of MC in site media exceed background and risk-based screening levels;
    - Determine the potential need for a removal action based on risk to site users from MEC.
    - Provide sufficient data for the EPA to complete the HRS.
- Evaluate the FUDS using the MRSPP.

1.3 Roles and Responsibilities

- USACE: Acts as the executing agency for the DoD with regard to the FUDS program. In this role, the USACE has decision-making authority and is responsible for ensuring work is conducted in accordance with applicable USACE and federal guidance. Additionally, USACE coordinates and works with project team members to meet needs expressed by regulatory agencies and stakeholders.
- Regulatory Agency: Participates in planning of SI activities to ensure the project meets applicable state standards and requirements.
- Property Owner(s): Provides available and pertinent information about the area, provides insight on current and anticipated future land uses for the property, and participates in project team discussions.
- Shaw: As a contractor to the USACE, conducts work on behalf of the USACE, provides TPP materials, makes site information available to the project team through a web-based information portal, and conducts and reports SI activities.

1.4 Site Inspection Process

- Data review,
- TPP,
- Site-Specific Work Plan (SSWP),
- SI field activities – reconnaissance, sampling, and analysis, and
- SI Report.

1.5 Technical Project Planning Process

- Conduct TPP meeting(s)* with key organizations and stakeholders,
- Identify stakeholder(s) concerns,
- Identify all AOCs for this SI,
- Review site information,
- Verify current and anticipated future land use,
- Develop CSM,
- Identify data gaps,
- Plan how to address data gaps,
- Develop DQOs for meeting SI requirements, and
- Concur on SI field work approach.

* Second TPP meeting to be determined by team members following review of results from SI field activities.

2.0 Background Information

Historical information contained in this package was obtained from the *Archives Search Report* (ASR) (USACE, 2004a) and the *INPR* (Inventory Project Report) *Supplement* (USACE, 2004b) for the Mountain Home AFR No. 1.

The Mountain Home AFR No. 1 was used as a precision bombing range for heavy bomber high-altitude bombardment training. The land was initially acquired from the Department of the Interior (DOI) in 1943 and used as a bombing range until 1947. Practice bombs and HE bombs were used on the range. The range land was relinquished to the DOI in 1959.

2.1 Site Name and Location

Mountain Home AFR No. 1, property number F10ID0140, is located in Owyhee County approximately 30 miles southwest of Mountain Home, ID and 9 miles southwest of the town of Grand View, ID (Figure 1).

Historical documents cited in the ASR (USACE, 2004a) indicate that the Mountain Home AFR No. 1 has been referred to by several different names:

- Mountain Home Air Force Range No. 1,
- Mountain Home Precision Bombing Range No. 1, and
- Demolition Bombing Range No. 1.

For this SI, this range will be referred to as Mountain Home AFR No. 1 to maintain consistency with the ASR, *INPR Supplement*, and Military Munitions Response Program (MMRP) Inventory.

2.2 Range Inventory

The Mountain Home AFR No. 1 is included in the MMRP Inventory in the *Defense Environmental Programs Annual Report to Congress Fiscal Year 2007* (DoD, 2007) with range information as follows:

Range Name	Federal Facility Identification	Range Total Acres
Mountain Home Air Force Range No. 1	ID9799F3044	2,564.22

The total acreage of the range includes a 4.22-acre access road that extends southwest from the range to Poison Creek Cutoff road.

Range areas and coordinates are listed in the *INPR Supplement* (USACE, 2004b) as follows:

Range Name	Range Identification	Approximate Area (acres)	UTM Coordinates (meters)
Bombing Range	F10ID014001R01	649	N 4745756.48 E 565041.24

Coordinates for the ranges are in Universal Transverse Mercator (UTM), Zone 11N, NAD 83.

The "bombing range" is represented as a 6,000-ft-diameter circle with the bombing target at the center of the circle. According to studies cited in the *INPR Supplement*, 99 percent of the bombs dropped on the bombing range should have landed with 3,000 ft of the bombing target.

Figure 2 shows the boundary of the FUDS and range on a recent (2004) aerial photograph.

2.3 Property History

2.3.1 Historical Military Use

Mountain Home AFR No. 1 was initiated and managed by Mountain Home Army Airfield, ID. The Army Air Corps started construction of the base on November 30, 1942 and completed construction in August 1943. Items constructed on the bombing range included:

- One day bombing target,
- One night bombing target,
- One 54-ft steel spotting tower,
- Two 30-ft steel spotting towers,
- One target generator house with wiring,
- One bombing panel,
- Adequate fire breaks around the range area,
- Complete housing and utilities for a camp with 35 men, and
- Necessary roads and parking area.

The bombing range had a target center consisting of concentric circles, with each circle approximately 200 ft larger in diameter than the preceding circle, out to a final diameter of 1,000 ft. Construction at the range consisted of earth-filled emplacements confined by planks for 10-ft-tall identifying squares, circles, and symbols, and a 30-ft by 30-ft target center, lath construction, painted white.

Mountain Home AFR No. 1 was used as a high-altitude bombing range. Various Bombardment Groups such as the 467th, 490th, and the 494th trained at the field during the remainder of World War II. Mountain Home AFR No. 1 was one of five practice bombing ranges used by the Mountain Home Army Airfield.

Mountain Home Army Airfield became a sub-base of Walla Walla Army Airfield and then Petersen Field, Colorado in 1946. On February 24, 1947, the 200th Army Air Force Base Unit, Mountain Home Army Airfield stated that the bombing range was "not in current use" and "no immediate future use is foreseen by this Headquarters." Mountain Home AFR No. 1 was declared excess to the needs of the Air Force according to a Department of the Army letter to the DOI, dated February 14, 1958 and relinquished to the DOI on that date.

A Certificate of Clearance was issued for Mountain Home AFR No. 1 on February 14, 1958. Available records do not indicate the removal of range improvements. The May 2003 site visit conducted by the USACE St. Louis District did not find any evidence of structures remaining on the site (USACE, 2004a).

2.3.2 Munitions Information

According to the *INPR Supplement* (USACE, 2004b), the munitions used at the Mountain Home AFR No. 1 included:

- 100-pound (lb) Practice bombs (M38A2) and
- Spotting charges (M1A1).

A site inspection conducted on April 21, 2003 as part of the ASR found a portion of an AN-M100 series tail fuze, which is associated with GP HE bombs. Therefore, it is assumed that the following additional munitions were used on the Mountain Home AFR No. 1:

- 100-lb GP HE bombs (AN-M30),
- Bomb tail fuzes (AN-M100 series), and
- Bomb nose fuzes (AN-M103A1).

The old-series GP bomb used during the World War II time period was a relatively thin-cased bomb with parallel sidewalls and a tapered aft section. Nose and tail fuzes were used either separately or in combination for a majority of operations. Approximately 50 percent of the complete weight of the round was its explosive filler, which typically consisted of Amatol (comprised of a mixture of ammonium nitrate and 2,4,6-trinitrotoluene [TNT]), TNT, Tritonal (80 percent TNT, 20 percent aluminum powder), or Composition B (59.5 percent hexahydro-1,3,5-trinitro-1,3,5-triazine [RDX], 39.5 percent TNT, and 1 percent wax).

The AN-M30 GP bomb was fuzed in the nose with the AN-M103 fuze or in the tail with the AN-M100A2 fuze. The alternate fuzes that were used as substitutes or for special purposes were the M103, M118, or M119 nose fuzes, and the M112, M100, M106 or its modifications, or the ANM100A1 tail fuzes.

The GP and M-series 100-lb bombs had the same dimensions. The weight of the case was 42.1 lb and the fins weighed between 5.6 to 17.5 lb.

The M38A2 practice bomb simulated a GP bomb of the same size. It was constructed of light sheet metal, approximately 22-gauge steel, formed by rolling a rectangular sheet of metal into the form of a cylinder approximately 8 inches in diameter, and spot-welding the seam. The rounded nose was pressed from the same metal, as was the tail, which was formed in the shape of a cone. The spotting charge was assembled in a sleeve at the base of the bomb, within the fin box. Authorized spotting charges were the M1A1, M3, and M5.

Munitions information is provided in Table 1.

There is no record or physical evidence indicating the use of chemical weapons at the Mountain Home AFR No. 1.

2.3.3 Ownership History

Prior to operation of the Mountain Home AFR No. 1, the area was comprised of undeveloped land managed by the DOI.

The land was acquired from the DOI by Public Land Order 172 on September 7, 1943. Acquired land included an access road that extended from the southwest corner of the range to the Poison Creek Cutoff road located to the southwest.

The site was used as a high-altitude bombing range from 1944 to 1953. From 1953 to 1958, the site remained under control of the U.S. Air Force but was not used as a bombing range. The range was retransferred to the DOI by Public Land Order 1898 on July 13, 1959.

Ownership of the land has remained with the DOI under the Bureau of Land Management (BLM) since relinquishment by the U.S. Air Force (Figure 3).

2.4 Physical Setting

The FUDS lies along the west side of the Snake River on the east side of the Columbia Plateau. The Boise Mountains lie about 40 miles to the north-northeast of the site, along the Boise River. There is a low divide between the Snake and Boise Rivers. Once semi-arid, farmlands within the area are now irrigated from reservoirs. Mountain Home AFR No. 1 is located in the Snake River Plain, approximately 12 miles west of the Strike Reservoir, which is situated on the Snake River.

2.4.1 Topography and Vegetation

Topography at the site is flat with minor gorges and gullies. The ground surface at the site gently slopes to the north and northeast. Elevation at the site ranges from 3,275 ft in the north within an unnamed gully to 3,500 ft in the southwest corner (Figure 4).

Vegetation is sparse and consists of low shrubs, grasses, and cactus. No trees are present on the range.

2.4.2 Surface Water

Surface water within a 15-mile radius of the range generally flows to the northeast to the Snake River (Figure 5). The Snake River flows in a general northwest direction. Six major creeks drain toward Snake River and include Castle Creek, Birch Creek, Shoofly Creek, Little Jacks Creek, and Big Jacks Creek. These creeks are generally ephemeral in nature and only flow during and immediately following precipitation events or when melting snow is present.

Two ephemeral streams, Vinson Wash and an unnamed creek, drain from the southwest to the northeast through the Mountain Home AFR No.1 FUDS property. Vinson Wash flows through the southeast portion of the bombing range. Both steams only contain water following a precipitation event and are dry the majority of the time.

Standing surface water does not exist within the range area.

2.4.3 Sensitive Environments

As part of the ASR, the U.S. Fish and Wildlife Service (USFWS) and the Idaho Department of Fish and Game's (IDFG) Idaho Conservation Data Center 2002 Database were contacted regarding the presence of any threatened or endangered species at the former Mountain Home AFR No. 1. There are no known federally listed threatened or endangered species within the range area (USFWS, 2008). The IDFG lists the Bull Trout as a listed threatened species within Owyhee County (IDFG, 2008). A listing of all identified listed threatened, endangered, or candidate species that reside within Owyhee County is as follows:

Class	**Status**	**Common Name**	**Scientific Name**
State	Candidate Species	Yellow-billed Cuckoo	*Coccyzus americanus*
State	Candidate Species	Columbia Spotted Frog - Great Basin	*Rana luteiventris*
State	Listed Threatened	Bull Trout	*Salvelinus confluentus*
Federal	Candidate Species	Columbia spotted frog	*Rana luteiventris*

Candidate Species are plants and animals for which the USFWS has insufficient information on their biological status of, and threats to, these species to propose them as endangered or threatened under the Endangered Species Act. However, it was agreed by parties in attendance at the TPP meeting that the Mountain Home AFR No. 1 is not suitable habitat for these species. Therefore, the Mountain Home AFR No. 1 is not identified as an IEP as defined by USACE (2006) or EPA (1997) and shown in Table 2.

The BLM has identified three species of sensitive plants that reside within the southwest corner of Section 35 within the FUDS: spreading gilia (*Ipomopsis polycladon)*, Snake River milk vetch (*Astragalus purshii var. ophiogenes*), and the Packard's Cowpie buckwheat (*Eriogonum shockleyi var. packardiae*). Field activities are not likely to disrupt the plants since field crews generally avoid trampling plants and obtain soil samples from bare ground areas.

There are no wetlands or other sensitive receptors within 4 miles of the range (Figure 6).

The ASR reports the Idaho State Historic Preservation Office (SHPO) was contacted regarding Mountain Home AFR No. 1 (USACE, 2004a). The SHPO indicated there are no specific known culturally significant historic or archeological sites in the vicinity. This will be confirmed with the SHPO, and it will be ascertained whether there are any archaeological resources within the project area that need to be avoided, prior to completion of the SSWP. Sampling activities to be conducted are anticipated to have minimal impact on the environmental setting, so it is believed that there will be no impact to any historic or cultural resources should any be identified at the FUDS property.

2.4.4 Climate

Mountain Home AFR No. 1 is located in an area where the climate is highly variable (USACE, 2004a). In general, winter weather is cloudy and unsettled. There are frequent periods of persistent wind from the southwest that result in mild temperatures, but there are also a few periods where temperatures stay below freezing and approach or fall below zero degrees. During the winter, measurable amounts of precipitation fall on about one-third of the days. Continuous home heating is generally not needed until mid-October and the need generally ceases around the beginning of June. The need for intermittent heating may continue until July.

Temperatures warm gradually in the spring, which are normally the wettest and windiest months of the year. The mean temperature for the area is 39 degrees Fahrenheit (°F). The maximum mean temperature, 59°F, occurs in July. The minimum mean temperature, 22°F, occurs in January. Summer temperatures start out mild but by July and August may reach into the 90s. Long periods of extremely hot temperatures are uncommon. Summer nights are generally cool with average temperatures in the 50s. Fall is characterized by mild days and cool nights. The first cold wave does not generally occur until late December.

The Mountain Home area averages approximately 8.4 inches of precipitation per year. The mean average wind speed is 10 miles per hour (mph). Sustained winds of 20 to 30 mph for days at a time are not unusual. The prevailing wind direction during the months of November through March is primarily from the east or east-southeast. Wind is primarily from the northwest from April through October.

2.4.5 Geologic and Hydrogeologic Setting

2.4.5.1 Bedrock Geology

The former Mountain Home AFR No. 1 site is located in the Owyhee Uplands subprovince. Owyhee Uplands is a domed, upwarped area consisting of a series of isolated, dissected mountains and incised plateaus that contain rhyolites and latites. These grade into younger lavas, mainly basalts in the Boise/ Malheur section of eastern Oregon/western Idaho, well exposed in deep canyons. The intermittent nature of the volcanic activity is illustrated by fine (often powdery) lake and river sediments interbedded with the basalts (Thornbury, 1965; Bonnichsen and Godchaux, 2006).

The geological background of this province is based in volcanic activity that started in the Miocene. There are deep volcanic deposits of basalts, tuffs, and tuffaceous sediments. While basalt is prevalent, other features include rhyolite, diatomaceous deposits, new sedimentary deposits, and new surface lava. The episodes of deposition affecting the Owyhee uplands include the Owyhee Basalts that erupted onto the plateau 13 to 12 million years ago and the ash-flow tufts from the Steens Mountains around the same time (Thornbury, 1965; Bonnichsen and Godchaux, 2006).

Details on local subsurface lithology are unknown because of the lack of wells within the area.

2.4.5.2 Overburden Soils

Soils of the Mountain Home AFR No. 1 are comprised of the Davy-Mazuma, Shoofly-Ornea, and Typic Torriorthents-Badland complexes.

The Davy-Mazuma complex consists of loamy fine sand at the surface that grades to a fine sandy loam and loamy sand at depth. This well-drained soil is derived from alluvium and occurs on sloped terraces of 12 to 40 percent. The Shoofly-Ornea complex consists of loam to gravelly loam at the surface that grades to gravelly clay loam to extremely gravelly coarse sand. This well-drained soil is derived from mixed alluvium derived from volcanic rock and occurs on fan remnants of 2 to 12 percent slopes. The Typic Torriorthents-Badland complex consists of weathered bedrock overlain with find sandy loam, gravelly loamy sand, and very gravelly sandy loam. This well-drained soil is derived from mixed alluvium and/or latchstring deposits and occurs on top of bedrock with slopes of 20 to 70 percent (U.S. Department of Agriculture [USDA], 2007).

The potential for frost development in the soil of the Mountain Home site extends to a depth of 24 inches.

2.4.5.3 Hydrogeology

Mountain Home AFR No. 1 is underlain by discontinuous volcanic- and sedimentary-rock aquifers. The rocks that comprise these aquifers consist of silicic volcanic rocks. The sedimentary rocks consist primarily of semi-consolidated sand and gravel eroded from volcanic

rocks. The permeability of the various rocks that compose the aquifer is extremely variable. Interflow zones and faults of basaltic lava flows; fractures of tuffaceous, welded silicic volcanic rocks; and interstices in coarse ash, sand, and gravel mostly yield less than 100 gallons per minute. Where major faults are present, the rocks commonly contain geothermal water under confined conditions (Whitehead, 1994).

Regional groundwater flow is assumed to be toward the Snake River located to the northeast. Quality of the groundwater is generally acceptable for any use.

The hydrogeologic characteristics of the specific aquifers underlying the site are unknown because there is little demand for groundwater.

Water Wells

Based on the Idaho Department of Water Resources, there are two domestic wells and one irrigation well within 4 miles of the Mountain Home AFR No. 1 FUDS property boundary. The domestic wells are located at distance of 1.5 miles (8,000 ft) and 3.4 miles (18,000 ft) from the property boundary. The domestic wells are side-gradient to the range based on regional groundwater flow. The irrigation well is located downgradient from the range at 4 miles (21,000 ft) from the property boundary. Depths of these wells range from 115 ft below ground surface (bgs) to 3,600 ft bgs. Static water levels range from 83 ft bgs to artesian (flowing well) (Idaho Department of Water Resources, 2007).

There are no wells within the property boundary of the Mountain Home AFR No. 1 FUDS.

2.5 Population and Land Use

2.5.1 Nearby Population

Grand View, ID, is the town located closest to the former Mountain Home AFR No. 1. This town has a population of 470 in 2000 (U.S. Census, 2000). Mountain Home AFR No. 1 is located in Owyhee County, ID, which had a population of 11,073 in 2000, and a population density of 1.4 persons per square mile (U.S. Census, 2000).

No persons live within 2 miles of the former Mountain Home AFR No. 1. Seventy-two persons live within 2 to 4 miles of the range (Figure 7).

2.5.2 Land Use

The former Mountain Home AFR No. 1 and surrounding land consists of open rangeland maintained by the BLM. The land has unrestricted public access and is used for off-roading, hunting and grazing of livestock.

2.5.3 Area Water Supply

A review of the Idaho Department of Water Resources database shows the presence of two domestic wells and one irrigation well within 4 miles of the Mountain Home AFR No. 1 FUDS

property boundary (IDWR, 2007) (Figure 8). There are no wells within the property boundary of the range.

There are no surface water supplies within 4 miles of the range.

2.6 Previous Investigations for MC and MEC

2.6.1 Certificate of Clearance

A Certificate of Clearance was issued for Mountain Home AFR No. 1 on June 13, 1957 and signed by Herbert G. Tyson, Captain, U.S. Air Force. The certificate was issued as an enclosure to a letter to BLM Supervisor for the State of Idaho dated February 14, 1958. This certificate states: "All of the above described land has been cleared of all dangerous and/or explosive materials reasonable possible to detect. There are no restrictions on the future use of all lands in Sections 26, 27 and 35. It is recommended that all lands in Section 34 be restricted to surface use only. It is possible that sub-surface ordnance remains undetected in Section 34 because of surface distortion caused by previous range clearance. It is recommended that Section 34 not be marked as a restricted area, since no danger exists during surface use. All present and/or future owners and inhabitants of these lands are hereby advised that if at any time an item identified or suspicious of being military ordnance is located, the nearest government or civil authorities should be immediately notified. Non-explosive scrap from the previous range clearance is buried on the range in the southwest corner of the northeast quarter of Section 34." The certificate further states: "The land has been cleared of all dangerous or explosive materials and restored to a condition satisfactory to the Bureau of Land Management Supervisor for the State of Idaho" (USACE, 2004a).

2.6.2 Inventory Project Report (USACE, 1988)

A Defense Environmental Restoration Program (DERP) FUDS *Draft INPR* for the Mountain Home AFR No. 1 was completed in May 1988. The findings determined that the site had been formerly used by the DoD and was therefore eligible under the DERP program. A Risk Assessment Code (RAC) of 5 was assigned to the bombing range.

2.6.3 Archives Search Report (USACE, 2004a)

USACE completed an ASR in September 2004 to assess the presence or absence of MEC and MC impacts from facility activities. The ASR included a visit to the site on April 21, 2004. The primary purpose of the site visit was to assess the presence of MEC through non-intrusive means. Interviews, historical research, and site reconnaissance determined:

- The U.S. Army Air Corps used conventional ordnance at Mountain Home AFR No. 1.
- Ordnance and explosives used at the range included:
  - Sand-filled M38A2, 100-lb practice bombs,
  - Practice bomb spotting charges, and

- GP HE bombs (based on the finding of an AN-M100 series fuze).

- No evidence exists for the use of chemical warfare materials storage or use at the range.

2.6.4 INPR Supplement (USACE, 2004b)

An *INPR Supplement* was completed in November 2004 identified the Air Force Range No. 1 as bombing range (649 acres), assigned a RAC score of 5, and confirmed of use of M38A2 practice bombs and remnants of a high explosive fuze on the range. No additional new information is provided in the document.

2.7 Other Land Uses that May Have Contributed to Contamination

Agricultural chemicals (e.g., fertilizers and pesticides) may contain or break down to low levels of compounds such as nitrobenzene that is also found in explosives.

2.8 Summary of Previous Investigations

Known use of MEC on the former Mountain Home AFR No. 1 consists of:

- 100-lb Practice bombs (M38A2) and
- Spotting charges (M1A1).

Suspected use of MEC on the former Mountain Home AFR No. 1 is based on the finding of an AN-M100 series fuze. Suspected MEC consist of:

- 100-lb GP HE bombs (AN-M30),
- Bomb tail fuzes (AN-M100 series), and
- Bomb nose fuzes (AN-M103A1), associated with AN-M30 GP HE bombs.

3.0 Conceptual Site Model – Bombing Range AOC

3.1 Overview

A site-specific CSM summarizes available site information and identifies relationships between exposure pathways and associated receptors. A CSM is used to determine the data types necessary to describe site conditions and quantify receptor exposure, and discusses the following information:

- Current site conditions and future land use;
- Potential MEC and MC sources (e.g., lead projectiles in an impact berm);
- Affected media;
- Governing fate and transport processes (e.g., surface water runoff and/or groundwater migration);
- Exposure media (i.e., media through which receptors could contact site-related contamination);
- Routes of exposure (e.g., inhalation, incidental ingestion, and dermal contact); and
- Potential human and/or representative ecological receptors at the exposure point. Receptors likely to be exposed to site contaminants are identified based on current and expected future land uses.

The CSM is evaluated for completeness and further developed as needed through TPP meetings and additional investigation.

3.2 Background

3.2.1 History of Use

Land for the former Mountain Home AFR No. 1 land was acquired from the DOI by Public Land Order 172 on September 7, 1943. The range was used as a high-altitude bombing range from 1944 to 1953. From 1953 to 1958 the site remained under control of the U.S. Air Force but was not used as a bombing range. The range eventually was retransferred to the DOI by Public Land Order 1898 on July 13, 1959.

Mountain Home AFR No. 1 was one of five practice bombing ranges used by the Mountain Home Army Airfield. The bombing range had a target center consisting of concentric circles, with each circle approximately 200 ft larger in diameter than the preceding circle, out to a final diameter of 1,000 ft. Bombing aircraft used the range for bombing practice by dropping both practice and GP bombs on the range.

3.2.2 Munitions and Associated MC

M38A2 100-lb practice bombs with small spotting charges were the munitions used at this range. Additionally, AN-M30 100-lb GP HE bombs with nose or tail fuzes may have been used at the range. The munitions and associated MC are summarized in Table 1.

3.2.3 Previous MEC Finds

MD from M38A2 practice bombs and an AN-M100 series bomb tail fuse associated with 100-lb GP HE bombs (AN-M30) have been found on the range.

3.2.4 Previous MC Sample Results

No sampling for MC has been conducted at the range.

3.2.5 Current and Future Land Use

The former Mountain Home AFR No. 1 and surrounding land consists of open rangeland maintained by the BLM. The land has unrestricted public access and is used for off-roading, hunting, and grazing of livestock.

3.2.6 Ecological Receptors

Ecological receptors consist primarily of mammals and birds. Although candidate species do reside in Owyhee County, the Mountain Home AFR No. 1 is not considered an IEP due to lack of suitable habitat (lack of surface water and trees).

3.3 MEC Evaluation

Potential MEC within the bombing range consist of:

- Practice bombs with spotting charges (spotting charges not associated with sensitive fuzes) and
- GP bombs with high explosives (explosives not burned or detonated from impact).

The M38A2 100-lb practice bomb poses a low risk attributed to the attached spotting charge. The M38A2 100-lb practice bomb is 47.5 inches long and is designed to simulate a GP bomb of the same size. The spotting charge was designed to detonate on impact to mark the location of the practice bomb on the target range. Spotting charges used with the M38A2 100-lb practice bomb consisted of either the M1A1 or M3. The spotting charge produces a flash of flame and smoke for observation of bombing accuracy.

Intact spotting charges, either the M1A1 or M3, are unlikely to be found. The force of impact with the ground and subsequent rusting of the charge and igniter would likely render the spotting charge inoperable. Spotting charges recently observed at other recently investigated bombing ranges were deformed to a degree from impact. The igniters were often bent or broken off of the spotting charge. Rust was visible on all surfaces of the spotting charges. For the spotting charge to function, it would have had to remain sealed through time with its container not rusted through or damaged by impact with the ground.

Tampering with an intact spotting charge that contains unaltered black powder could result in bodily harm. Hammering or attempts to disassemble the black-powder filled canister could result in explosion resulting from shock or friction. An exploding spotting charge could cause burns, injury (possibly severe), and/or blinding.

The initiation of the igniters and fuzes associated with the GP HE bombs is by impact or impact inertia requiring a force to cause the firing pin to strike a primer/detonator. The bomb fuzes can have a delay functioning.

The GP HE bomb fuze may be caused to function by being tampered with or by being struck with farming equipment, detonating the GP HE bomb and causing death, severe injury, blinding, and/or severe property damage.

It is noted that the site is used for agricultural and recreational activities, and that no incidents with MEC have been recorded in over 50 years since the range was used.

3.4 MC Pathway Evaluation

3.4.1 Overview of Site Characteristics

Mountain Home AFR No. 1 is located in the Snake River Plain, approximately 12 miles west of the Strike Reservoir, which is situated on the Snake River. Topography at the site is flat with minor gorges and gullies. Soils are primarily well-drained and derived from mixed alluvium and/or lacustrine deposits. Surface water within a 15-mile radius of the range generally flows to the northeast to the Snake River. Vegetation is sparse consisting of low shrubs, grasses, and cactus. No trees are present on the range.

Mountain Home AFR No. 1 is underlain by discontinuous volcanic- and sedimentary-rock aquifers. Regional groundwater flow is toward the Snake River located to the northeast. Quality of the groundwater is generally of sufficient quality for any use. Static water levels, as measured in wells within a 4-mile radius of the FUDS boundary, vary from artesian (flowing well) to 83 ft bgs. There are no wells within the property boundary of the Mountain Home AFR No. 1 FUDS.

3.4.2 Terrestrial Pathway

3.4.2.1 Sources of MC

MC is derived from the use of practice bombs with spotting charges and GP bombs with HE. It is assumed that approximately 99 percent of the MC would have been initially deposited within 3,000 ft of the target center.

The bombing range has not previously been sampled or analyzed for MC.

3.4.2.2 Migration Pathway

Soil is the primary medium of concern because possible MC were initially introduced to the soil. The soil also serves as a secondary source of potential air, surface water, or groundwater MC impacts.

Explosive compounds may have degraded over time.

Agricultural activities may have contributed to the migration of MC through the process of soil mixing, irrigation, and fertilization of land that may promote degradation and dispersion of MC. Additionally, wind and rain may have dispersed MC.

3.4.2.3 Land Use and Access

The former Mountain Home AFR No. 1 and surrounding land consists of open rangeland to which the public has unrestricted access and which is used for off-roading, hunting, and grazing of livestock. Use of the land is not anticipated to change in the foreseeable future.

3.4.2.4 Human Receptors

Potential receptors include ranch workers, agricultural workers, BLM workers, hunters, recreational users, and trespassers. The potential routes of human exposure to MC-impacted soil are dermal contact, ingestion, and inhalation of soil particulates during intrusive work.

The terrestrial pathway is potentially complete for human exposure.

3.4.2.5 Ecological Assessment

While there are no known federally listed threatened or endangered species within the range area, the former Mountain Home AFR No. 1 is considered an IEP because of the presence of a candidate species.

Potential receptors include livestock and wildlife. The potential routes of livestock and wildlife exposure to MC-impacted soil are dermal contact, ingestion, and inhalation.

The terrestrial pathway is potentially complete for ecological exposure.

3.4.3 Surface Water / Sediment Pathway

3.4.3.1 Sources of MC

MC-impacted surface soils within the Mountain Home AFR No. 1 could migrate to Vinson Wash and an unnamed creek that drain through the bombing range from the southwest to the northeast.

3.4.3.2 Migration Pathway

Migration of MC-impacted soils would occur during storm events and snow melts that are intense enough to cause surface runoff to the creeks. Since the area averages 8.4 inches of precipitation per year, surface runoff and flow within the creeks occurs rarely.

The two creeks that drain through the range discharge to the Snake River approximately 9 miles to the northeast.

Explosive compounds may have degraded over time.

3.4.3.3 Surface Water Use and Access

Surface water within the area of Mountain Home AFR No. 1 is not used because it is ephemeral. Agricultural activities and domiciles use groundwater within the area. Any manmade surface water bodes (i.e., ponds) within the area are filled with groundwater from wells for livestock watering.

3.4.3.4 Human Receptors

Potential receptors include ranch workers, agricultural workers, BLM workers, hunters, recreational users, and trespassers. The potential routes of human exposure to MC-impacted surface water and sediment include dermal contact, ingestion, and inhalation. Actual exposure to surface water would rarely occur because the environment is so dry that that surface water is ephemeral in nature. Sediment exposure would be similar to exposure to surface soils.

The surface water exposure pathway is potentially complete for human exposure when surface water is present. Surface water rarely occurs because of the environment is so dry, thus contact with water would be very infrequent to non-existent.

Exposure to sediment is a potentially complete pathway.

3.4.3.5 Ecological Assessment

Although there are listed threatened and candidate species within Owyhee County, it is unlikely that these species reside within former Mountain Home AFR No. 1 are due to the lack of suitable habitat. Therefore, former Mountain Home AFR No. 1 is not considered an IEP.

Potential receptors include livestock and wildlife. The potential routes of livestock and wildlife exposure to MC-impacted surface water and sediment include dermal contact, ingestion, and inhalation. Primary exposure is assumed to be via sediment and not surface water since the environment is so dry that surface water is ephemeral in nature.

The surface water pathway is potentially complete for ecological exposure when surface water is present.

The sediment exposure pathway is potentially complete for livestock and wildlife.

3.4.4 Groundwater Pathway

3.4.4.1 Sources of MC

MC within groundwater beneath the Mountain Home AFR No. 1 would be derived primarily from surface soils and secondarily from MC-impacted sediments.

3.4.4.2 Migration Pathway

Precipitation with associated infiltration would act as the primary process for the movement of MC to groundwater. Low precipitation and high evapotranspiration for this area would limit the downward migration of MC through soils to groundwater.

Metals and explosive compounds have generally low solubilities, which limit movement. In addition, surface soils include a mixture of loamy fine sands that readily inhibit the movement of metals and explosive.

MC that reach groundwater would migrate to the northeast with the general regional groundwater flow.

3.4.4.3 Groundwater Use and Access

Based on the Idaho Department of Water Resources information, there are two domestic wells and one irrigation well within 4 miles of the Mountain Home AFR No. 1 FUDS property boundary. There are no wells within the property boundary of the Mountain Home AFR No. 1 FUDS.

The domestic wells are located at distance of 1.5 miles (8,000 ft) and 3.4 miles (18,000 ft) from the property boundary. The domestic wells are side-gradient to the range based on regional groundwater flow. The irrigation well is located downgradient from the range at 4 miles (21,000 ft) from the property boundary. Depths of these wells range from 115 ft bgs to 3,600 ft bgs. Static water levels range from 83 ft bgs to artesian (flowing well).

3.4.4.4 Human Receptors

Potential human receptors include ranch workers, agricultural workers, BLM workers, and landowners. The potential routes of human exposure to MC-impacted groundwater include dermal contact, ingestion, and inhalation.

The human exposure pathway to groundwater is considered incomplete because it is unlikely that MC have migrated to groundwater, and because of the location and distance of the domestic and irrigation wells from the range.

3.4.5 Air Pathway

3.4.5.1 Sources of MC

Impacted soils are the primary source and sediments are the secondary source of airborne MC at Mountain Home AFR No. 1.

3.4.5.2 Migration Pathway

The MC are considered non-volatile. Exposure to airborne MC would be from MC-impacted dust. Livestock grazing and recreational activities would generate limited dust.

3.4.5.3 Human Receptors

Potential human receptors include ranch workers, agricultural workers, BLM workers, and landowners. The potential routes of human exposure to dust are by dermal contact, ingestion, and inhalation. However, the air pathway is considered incomplete because of the non-volatility of the MC. The exposure to the air pathway is considered in the human health screening values for soils.

3.5 CSM Summary/Data Gaps

Evaluation of the CSM indicates the following known conditions or data gaps.

Pathway	Presence of MEC	Presence of MC	Notes
Soil	MD derived from M38A2 practice bombs and AN-M30 GP bombs have been documented on the site.	Unknown	One site clearance has been conducted. The area is currently used for agricultural (grazing), recreational, and hunting purposes. No previous analytical work has been conducted.
Sediment	Unknown	Unknown	No previous analytical work has been conducted.
Surface water	Unknown	Unknown	Surface water, when present, is considered to have a potentially viable exposure pathway. No previous analytical work has been conducted
Groundwater	Unknown	Unknown	Groundwater is not considered to have a viable exposure pathway.
Air	Not Applicable	Not Applicable	Air is not considered a viable exposure pathway.

4.0 Proposed Field Investigation

A proposed field investigation sampling approach for the Mountain Home AFR No. 1 is presented below. This sampling approach is to be reviewed, revised, and agreed to by TPP participants. The investigation approach will be defined in more detail in a SSWP that will be submitted to TPP participants and other stakeholders for review. The SSWP will reference technical details including sampling and analytical methods that are described in the *Type I Work Plan, Site Inspections at Multiple Sites* (Shaw, 2006).

4.1 Bombing Range AOC

The proposed investigation of the bombing range AOC consists of a site reconnaissance and site media (surface soils, surface water, and sediment) sampling. Surface soil samples will be collected using multi-increment sampling (MIS) techniques.

The proposed sampling for the Mountain Home AFR No. 1 bombing range AOC is summarized in Table 3.

4.1.1 Reconnaissance

A visual reconnaissance of the AOC will be performed in conjunction with MIS of surface soil samples. The visual reconnaissance will be conducted within the full extent of the 6,000-ft-diameter bombing range, which includes the five MIS decision units.

Although MEC is not expected to be present on the land surface, a magnetometer-assisted, visual inspection will be conducted by a qualified unexploded ordnance (UXO) technician at suspect locations within the AOC. A global positioning system (GPS) will be used to record the reconnaissance path walked and any discovered MEC and/or MD. Digital photographs will be taken to document significant features.

4.1.2 Soil Samples

One MIS soil sample will be obtained from each MIS decision unit. MIS will be conducted concurrent with the visual reconnaissance of each decision unit. Thirty to 100 increment samples will be collected from each decision unit area consistent with MIS protocol. Increment samples will be randomly collected along the random reconnaissance path within the boundaries of the decision unit area. The reconnaissance path will be recorded using GPS for data reporting purposed but individual increment soil samples will not be recorded.

MIS requires the identification of decision units that are areas where sampling will be conducted. Five decision unit areas are proposed for the bombing range AOC (Figure 9). The two smallest decision units are concentrically located around the bombing target center where the greatest amount of MC residue is expected to be concentrated. Three additional decision units are equally spaced around the outside the inner decision units within 1,000 ft of the bombing target center.

Three additional ad hoc MIS will be obtained from disturbed soil areas, if encountered, within the bombing range AOC. Stained soils, visible craters, or stressed vegetation are considered disturbed soil areas. The size of the ad hoc decision units will be determined in the field and will be designed to encompass the disturbed soil feature.

All soil samples will be analyzed for explosives by EPA SW-846 Method 8330B and metals (antimony, copper, lead, and zinc) by EPA SW-846 Method 6020A.

4.1.3 Surface Water and Sediment Samples

Surface water and sediment samples will be collected from Vinson Wash that flows from the southwest to the northeast through the bombing range. It is assumed that the wash receives runoff from the bombing range. Therefore, two sets of surface water and sediment samples will be collected from the Vinson Wash upgradient and downgradient of the Mountain Home AFR No. 1. Exact locations will be determined in the field based on access.

Since the Vinson Wash is ephemeral, surface water samples will not be collected if water is not present at the time of the field inspection. Sediment samples will be collected regardless of the presence of water. Both surface water and sediment samples will be collected as grab samples.

Surface water and sediment samples will be analyzed for explosives by EPA SW-846 Method 8330B and metals (antimony, copper, lead, and zinc) by EPA SW-846 Method 6020A.

4.1.4 Background Sampling

One background soil sample will be collected as a MIS from a location to be chosen in the field within the northern portion of the FUDS outside the boundary of the 6,000-ft-diameter bombing target AOC. The background soil sample will be analyzed only for metals (antimony, copper, lead, and zinc) by EPA SW-846 Method 6020A, since explosives are not expected to occur naturally.

5.0 TPP and Development of Data Quality Objectives

5.1 TPP Process

- The USACE TPP process is a four-phase process:
  - Identify the current project,
  - Determine data needs,
  - Develop data collection options, and
  - Finalize data collection program.
- The purpose of TPP is to develop DQOs that document how the project makes decisions.
- DQOs are intended to capture project-specific information such as the intended data use(s), data needs, and how these items will be achieved.
- Information captured through DQOs will be used as a benchmark for determining whether identified objectives are met.

5.2 TPP Phases

Phase I: Identify the Current Project

1. **Question:** Is there any person or organization missing from this Team?

   Answer: Although BLM personnel could not attend the TPP meeting, they will be included in document reviews for the entire SI process. The BLM is the sole landowner of the FUDS.

2. **Question:** Are there any other AOCs to be identified?

   Answer: No.

3. **Question:** Are there additional concerns or issues from landowners or other stakeholders regarding the bombing range AOC?

   Answer: No.

4. **Question:** Are there any administrative or stakeholder concerns or constraints that would prevent site inspection activities from going forward on the decision path for this site?

   Answer: None.

Phase II: Determine Data Needs

5. **Question:** Are there any other pertinent documents relating to the site available?

   Answer: None are known at this time.

6. **Question:** Are there any other site aspects/information that should be considered?

   Answer: No.

7. **Question:** Do team members concur with the CSM?

   Answer: The TPP participants agreed with the CSM. The IDEQ reviewed the site's classification and had no comments on the Draft TPP Memorandum.

   - **Are any data missing?**
     Answer: None.

   - **What is the nature of needed data?**
     Answer: MEC existence and MC concentrations need to be determined.

   - **What data gaps would additional data meet for making a decision about the site?**
     Answer: Information on MEC and MC.

   - **Are there any considerations/constraints that need to be addressed for collecting additional data?**
     Answer: None.

Phase III: Develop Data Collection Options

8. **Question:** Based on the desired decision endpoints and information known to date, what additional information is needed to reach a determination of NDAI or further action?

   Answer: MEC existence and MC concentrations need to be determined.

9. **Question:** Are the stakeholders in agreement with the sampling approach program?

   Answer: Yes.

10. **Question:** Are the stakeholders in agreement with the proposed approach for collecting background data?

    Answer: Yes.

Phase IV: Finalize Data Collection Program

11. Background Data

Background data will be obtained for metals only. Background sampling for explosives is not necessary since explosive compounds would not occur naturally at or around the bombing range. One background soil sample will be collected as a MIS.

12. Human Health Screening Level Risk Assessment

Sample results that exceed background will be compared to screening values. The site will be considered NDAI for MC if site results do not exceed screening values (depending also on ecological evaluation).

What concentrations of potential MC of concern (metals and explosives) lead to decision end-points for human health (see Human Health Screening Level Tables 4 through 5)?

Question: Are these the correct standards to be applied as screening values for human health risk assessment?

Answer: TPP members had no comments on Human Health screening values after review of the Draft TPP Memorandum.

13. Ecological Screening Level Risk Assessment

The USACE has defined a process for conducting screening level ecological risk assessment (SLERA). A determination is first made whether the site qualifies as an IEP. A second determination is made whether the site is managed for ecological purposes. If neither criterion is met then a SLERA is not required and the process is limited to making observations during the site visit of any acute effects to flora and fauna that may be related to MC. If the site does qualify as an IEP or is managed for ecological purposes, site results that exceed background will be compared to ecological screening values. The site will be considered NDAI for MC if site results do not exceed screening values (depending also on human health evaluation).

Question: Does the site qualify as an IEP?

Answer: TPP members tentatively agreed that the site does not qualify as an IEP. The IDEQ had no further comments regarding the IEP classification after reviewing the Draft TPP Memorandum.

Question: Is the site managed for ecological purposes?

Answer: No.

Question: If the site is an IEP or is managed for ecological purposes, what concentrations of potential MC of concern (explosives) lead to decision end-points for ecological risks?

Answer: Not applicable.

Question: Are these the correct standards to be applied as screening values for ecological risk assessment?

Answer: Not applicable.

14. Other Sampling Issues

Question: Are there any additional sampling and analysis methodologies needed for all team members to arrive at a decision end-point?

Answer: None.

Question: Given the additional sampling and analysis methodologies, are there impacts to the project schedule that need to be accommodated?

Answer: Not applicable.

6.0 Data Quality Objectives

Upon agreement at the TPP meeting, the following decision rules will be applied with regard to MC sampling results:

- Below risk-based screening levels = NDAI;
- Above risk-based screening levels and background = RI/FS.

The following expanded project objectives have been developed.

Objective 1: Determine if the site requires additional investigation or can be recommended for NDAI based on the presence or absence of MEC.

DQO No. 1 – Using trained UXO personnel and handheld magnetometers, a visual search of the AOC will be conducted searching for physical evidence to indicate the presence of MEC (e.g., craters and ground scars, MEC on the surface, MD, and soil discoloration indicative of explosives). The visual search will consist of a meandering path within the AOC. The following decision rules will apply:

- If no evidence of MEC is found, the AOC will be recommended for NDAI relative to MEC.
- If evidence of MEC is confirmed, the AOC will be recommended for additional investigation.
- If there is indication of an imminent MEC hazard, the site may be recommended for a removal action.

Objective 2: Determine if the site requires additional investigation or can be recommended for NDAI based on the presence or absence of MC above screening values.

DQO No. 2 – Soil, sediment, and surface water samples will be collected and analyzed. Analytical results will be compared to screening values for human health and ecological risk assessment, and to background values for naturally occurring substances. The following decision rules will apply:

- If sample results are less than human health screening values for all decision units, the site will be recommended for NDAI relative to MC.
- If sample results exceed both human health screening values and background values for any of the decision units, the site will be recommended for additional investigation.
- If sample results do not exceed human health screening values but do exceed background values for any decision unit, additional evaluation of the data will be conducted in conjunction with the stakeholders to determine if additional investigation is warranted.

Objective 3: Obtain data required for HRS scoring.

Data required for HRS scoring are identified in the HRS Data Gaps worksheet.

Objective 4: Obtain data required for MRSPP ranking.

Data required for MRSPP ranking are identified in the MRSPP worksheet. MRSPP scoring will be conducted for the entire AOC, not individual decision units.

Next Steps

- USACE will obtain necessary rights-of-entry.
- Shaw will prepare the Final TPP Memorandum.
- Shaw will prepare the SSWP for review and comment.
- Shaw will conduct field work.
- Shaw will prepare the SI Report and submit for stakeholder review.
- USACE will schedule a second TPP meeting to review comments on the Draft Final SI Report.

7.0 References

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Figures

DRAWING NUMBER 87_MountainHome_001_Fig1_SiteLocation_TPP

DRAWN BY K.Masterson 10/18/07

OFFICE MNRVL

558000 000000 564000 000000 570000 000000 576000 000000

4762000 000000

4756000 000000

4750000 000000

4744000 000000

Elmore Co.

Snake River

Grand View

Birch Creek

78

Owyhee Co.

Shoofly Creek

Legend

Mountain Home Air Force Range FUDS Property

NOTES:
1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Topographic map (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies, 1999.

N

0 3,500 7,000 14,000 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 1

SITE LOCATION

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw Shaw Environmental, Inc.

DRAWING NUMBER 87_MountainHome_002_Fig2_CurrentAerial_TPP

DRAWN BY K.Masterson 10/18/07

OFFICE MNRVL

562000 000000 564000 000000 566000 000000

4748000 000000

4746000 000000

4744000 000000

PRACTICE BOMBING RANGE

Owyhee Co.

Poison Gulch

Poison Creek Ctr

Vinson Wash

Vinson Wash

Twentymile Gulch

Poison Creek

Legend

Mountain Home Air Force Range FUDS Property

Range in the MMRP Inventory

NOTES:

1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Aerial photograph (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies; photograph is from the USDA-APFO National Agricultural Inventory Project (NAIP), 2004.

N

0 1,050 2,100 4,200 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 2

CURRENT AERIAL PHOTOGRAPH

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

DRAWING NUMBER 87_MountainHome_003_Fig3_ParcelOwnership_TPP

DRAWN BY K.Masterson 10/18/07

OFFICE MNRVL

562000.000000 564000.000000 566000.000000 568000.000000

4748000.000000 4746000.000000 4744000.000000 4742000.000000

State of Idaho

PRACTICE BOMBING RANGE

BLM

Vinson Wash

State of Idaho

Poison Gulch

Vinson Wash

Poison Creek Cut

Twentymile Gulch

Poison Creek

Poison Creek Rd

Snooly Creek

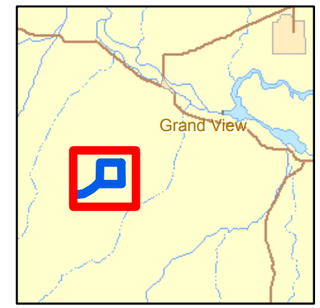
State of Idaho

Legend

- Mountain Home Air Force Range FUDS Property
- Range in the MMRP Inventory
- Taxlot Parcel

NOTES:

1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Parcel data obtained from the Idaho BLM office.
3) Aerial photograph (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies; photograph is from the USDA-APFO National Agricultural Inventory Project (NAIP), 2004.



0 1,375 2,750 5,500 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

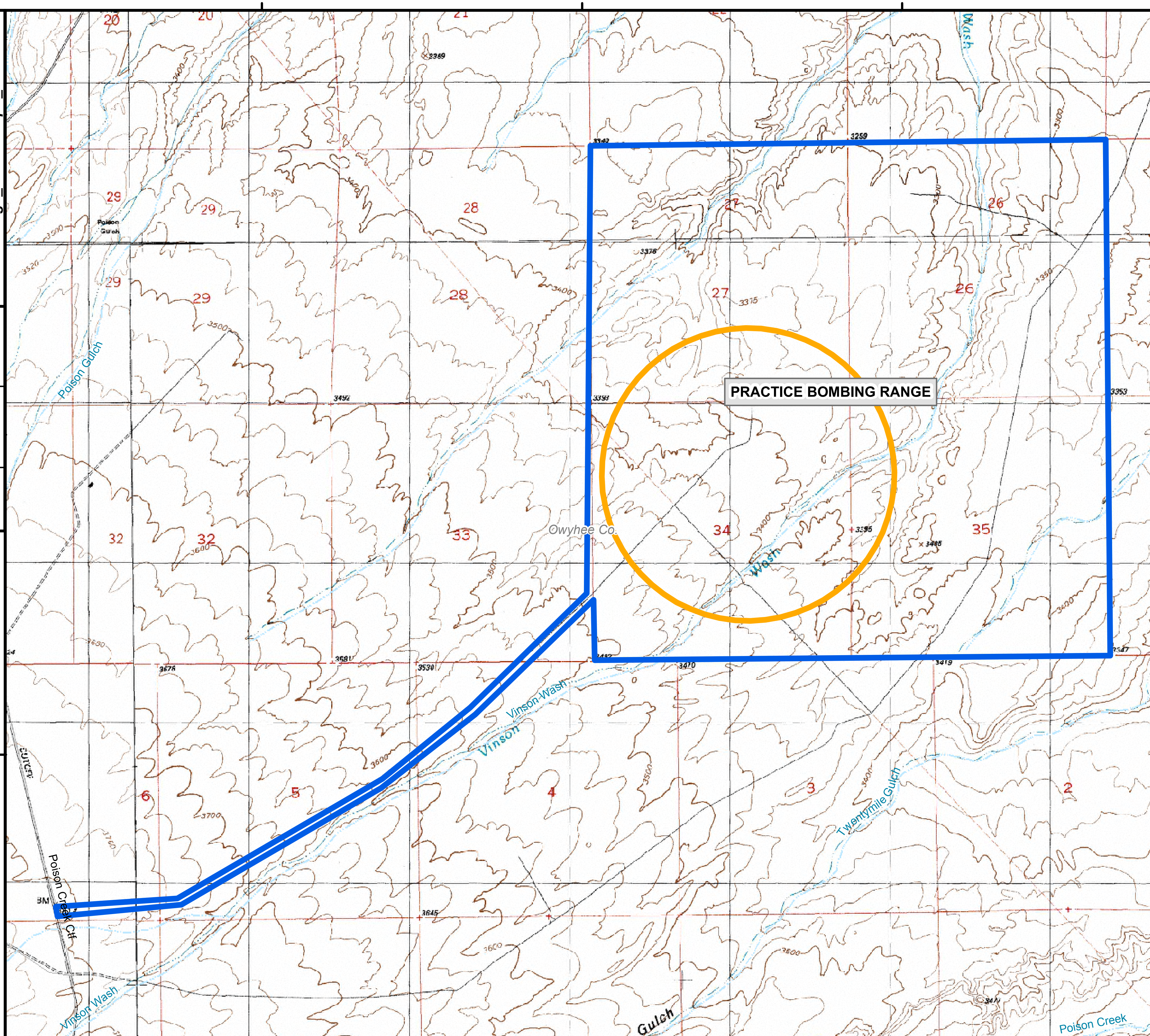
FIGURE 3

PARCEL OWNERSHIP

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

OFFICE: MNRVL | DRAWN BY: K.Masterson 10/18/07 | DRAWING NUMBER: 87_MountainHome_004_Fig4_CurrentTopo_TPP

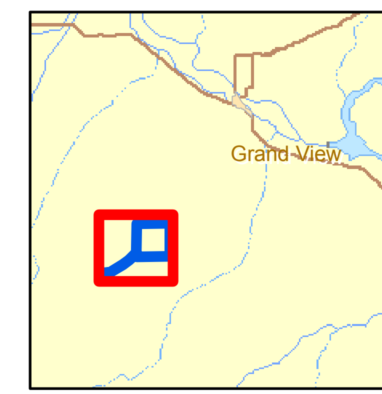


Legend

- Mountain Home Air Force Range FUDS Property (blue outline)
- Range in the MMRP Inventory (orange outline)

NOTES:
1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Topographic map (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies, 1999.

N



0 1,050 2,100 4,200 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 4

CURRENT TOPOGRAPHIC MAP

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

DRAWING NUMBER 87_MountainHome_005_Fig5_RegSurfaceWater_TPP

DRAWN BY K.Masterson 10/18/07

OFFICE MNRVL

540000 000000 550000 000000 560000 000000 570000 000000 580000 000000 590000 000000

4770000 000000 4760000 000000 4750000 000000 4740000 000000 4730000 000000 4720000 000000

Ada Co.

Elmore Co.

Owyhee Co.

Sinker Creek
Picket Creek
Catherine Creek
Castle Creek
Corder Creek
Canyon Creek
Birch Creek
Snake River
Grand View
Snake River
C J Strike Reservoir
Jacks Creek
Sugar Valley Wash
Shoofly Creek
Rock Creek
South Fork Castle Creek
West Fork Shoofly Creek
Little Jacks Creek
Big Jacks Creek
Sugar Creek
Battle Creek

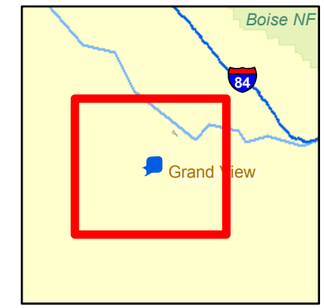
67
3804
3804
78
51

Legend

Mountain Home Air Force Range FUDS Property

15-Mile Radius from FUDS Property

NOTES:
1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Topographic map (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies, 1999.



N

0 1.75 3.5 7 Miles

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 5

REGIONAL SURFACE WATER DRAINAGE WITHIN A 15-MILE RADIUS

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

DRAWING NUMBER *87_MountainHome_006_Fig6_SensRec_TPP*

DRAWN BY *K.Masterson* *10/18/07*

OFFICE MNRVL

556000.000000 560000.000000 564000.000000 568000.000000 572000.000000

4752000.000000 4748000.000000 4744000.000000 4740000.000000

Rough Mountain NE

Vinson Wash

Grand View

Rough Mountain

Purjue Canyon

Chalk Hills

Triangle

Owyhee Co.

PRACTICE BOMBING RANGE

Birch Creek

Mc Keeth Creek

Twentymile Gulch

Good Rd

Dairy Rd

Vinson Wash

Poison Creek Cir

Poison Gulch

Twentymile Gulch

Poison Creek

Shoofly Creek

Poison Creek Rd

Halfway Gulch

Vinson Wash

Legend

- Mountain Home Air Force Range FUDS Property
- 4-Mile Radius from FUDS Property
- Range in the MMRP Inventory
- 24k Quadrangle

NOTES:

1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Topographic map (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies, 1999.
3) No Sensitive Receptors found within a 4-mile radius of the FUDS property.

N

0 3,000 6,000 12,000 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 6

SENSITIVE RECEPTORS WITHIN A 4-MILE RADIUS

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

2000 CENSUS DATA			
Population		Housing Units	Households
Within FUDS Boundary	0	0	0
FUDS + 1/4 Mile	0	0	0
FUDS + 1/2 Mile	0	0	0
FUDS + 1 Mile	0	0	0
FUDS + 2 Miles	72	29	26
FUDS + 3 Miles	72	29	26
FUDS + 4 Miles	72	31	26

DRAWING NUMBER *87_MountainHome_007_Fig7_Demographics_TPP*

DRAWN BY *K.Masterson* *10/18/07*

OFFICE MNRVL

560000 000000

570000 000000

4750000 000000

4740000 000000

4 Mi.
3 Mi.
2 Mi.
1 Mi.
0.5 Mi.
0.25 Mi.
0.2
0.8

Owyhee Co.

Good Rd
Good Rd
Dairy Rd
Dairy Rd
Shoofly Rd
Poison Creek Rd
Poison Creek Ctr
Poison Creek Ctr
Poison Creek Rd
Poison Creek Rd
Mud Flat Rd
Mud Flat Rd

Legend

Mountain Home Air Force Range FUDS Property

2005 Census Block Group Population

557

1612

Census Block Centroid Unit

1.7 Number of People per Sqaure Mile

NOTES:

1) FUDS and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Census data were obtained from StreetMap, ESRI, 2006.
3) The 2005 population of Owyhee County was 1.4 people per square mile.
4) The Census Block Centroid Units represent centroids of the smallest entities for which the Census Bureau tabulates census information, bounded on all sides by visible features such as streets, streams, and railroad tracks, and/or invisible boundaries such as city, town, and county limits. The population assigned to a centroid unit may be a positive integer or zero. The centroid populations were summed within defined distances from the FUDS boundary to generate population totals presented on the inset table.
5) Aerial photograph (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies; photograph is from the USDA-AFPO National Agricultural Inventory Project (NAIP), 2004.

N

Grand View

0 3,000 6,000 12,000 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 7

CENSUS DATA WITHIN A 4-MILE RADIUS

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

DRAWING NUMBER 87_MountainHome_008_Fig8_GWWells_TPP

DRAWN BY K.Masterson 10/18/07

OFFICE MNRVL

556000 560000 564000 568000 572000

4752000 4748000 4744000 4740000

PRACTICE BOMBING RANGE

Owyhee Co.

Birch Creek
McKeeth Creek
Vinson Wash
Twentymile Gulch
Poison Creek Cir
Poison Gulch
Poison Creek
Shoofly Creek
Poison Creek Rd
Halfway Gulch

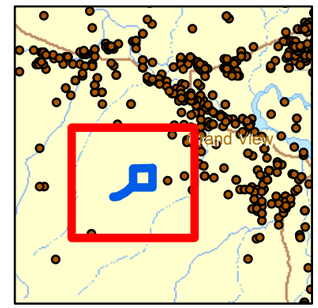
390045
352364
389295
381925
374751
401494
381472

Good Rd
Dairy Rd

Legend

- Mountain Home Air Force Range FUDS Property
- Range in the MMRP Inventory
- Domestic
- Irrigation

NOTES:
1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Topographic map (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies, 1999.
3) Groundwater wells (May 2007) were downloaded from the Idaho Department of Water Resources website (http://www.idwr.idaho.gov/ftp/gisdata).



0 3,000 6,000 12,000 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 8

GROUNDWATER WELLS WITHIN A 4-MILE RADIUS

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw Shaw Environmental, Inc.

OFFICE	DRAWN BY	
DEN	M. Mireiter	11/04/07

DRAWING NUMBER 87_MountainHome_009_Fig9_DecisionUnit_TPP

564000.000000 564500.000000 565000.000000 565500.000000 566000.000000

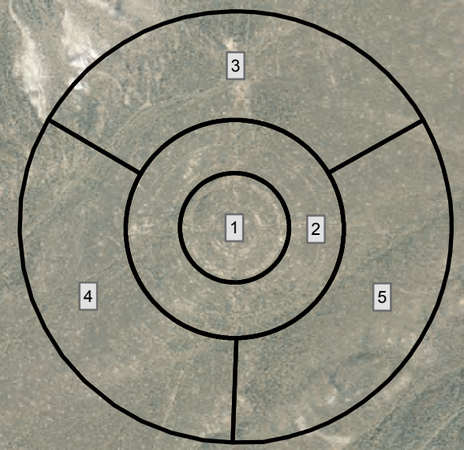
4746500.000000

4746000.000000

4745500.000000

4745000.000000

PRACTICE BOMBING RANGE



Decision Unit	Approximate Acreage
1	5
2	14
3, 4, 5	18

Legend

- Mountain Home Air Force Range FUDS Property
- Range in the MMRP Inventory
- 1 Decision Unit

NOTES:
1) FUDS property and range boundaries were obtained from a GIS dataset provided by the USACE.
2) Aerial photograph (Owyhee County) was obtained from the U.S. Department of Agriculture, Service Center Agencies; photograph is from the USDA-APFO National Agricultural Inventory Project (NAIP), 2004.

N

0 350 700 1,400 Feet

REFERENCE/PROJECTION: NAD 83 UTM Zone 11N

U.S. ARMY CORPS OF ENGINEERS
OMAHA DESIGN CENTER

FIGURE 9

PROPOSED MULTI-INCREMENT SAMPLING DECISION UNITS

MOUNTAIN HOME AIR FORCE RANGE NO. 1
FUDS PROPERTY NUMBER F10ID0140

Shaw® Shaw Environmental, Inc.

Tables

Table 1
Munitions Information
Mountain Home AFR No. 1

Ordnance	Description	Filler	Munitions Constituents
100-lb GP Bomb (AN-M30)	The old-series GP bomb was a relatively thin-cased bomb with parallel sidewalls and a tapered aft section. Both nose and tail fuzes were used for a majority of operations.	Approximately 50 % of the complete weight of the round consists of explosives.	TNT, Amatol, 50/50 Amatol and TNT, Tritonal, or Composition B.
100-lb Practice Bomb (M38A2)	Light sheet metal (approximately 22-gauge), with sand and spotting charge.	Sand.	Metals from steel.
Spotting Charge, (M1A1)	Large can, 11.18 inches long by 3.43 inches diameter; 28-gauge blank shotgun shell primer.	3 lbs black powder (produced flame & white smoke).	Black powder (potassium nitrate, sulfur, charcoal), Anthracene, Hexachloroethane, Perchlorate.
Bomb Tail Fuze, (AN-M100 series)	Located in tail section of GP HE bomb. Initiation of the igniters and fuzes results from impact or impact inertia requiring a force to cause the firing pin to strike a primer/detonator.	Not Applicable.	Minute quantities of perchlorate, lead azide, lead thiocyanate, lead styphnate, mercury-fulminate, black powder, lead chromate, silicon, barium, manganese, sulfur, red lead oxide.
Bomb Nose Fuze (AN-M103A1)	Located in nose section of GP HE bomb. Initiation of the igniters and fuzes results from impact or impact inertia requiring a force to cause the firing pin to strike a primer/detonator.	Not Applicable.	

TNT = 2,4,6-trinitrotoluene
Amatol = ammonium nitrate and TNT mixture
Tritonal = TNT and aluminum powder mixture
RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine
Composition B = 59.5% RDX, 39.5% TNT, and 1% wax

Table 2
Army Checklist for Important Ecological Places [a]
Mountain Home AFR No. 1

	Criteria	Yes / No	Comments
1	Locally important ecological place identified by the Integrated Natural Resource Management Plan, BRAC Cleanup Plan or Redevelopment Plan, or other official land management plans	☐ / ☒	
2	Critical habitat for Federal designated endangered or threatened species	☐ / ☒	
3	Marine Sanctuary	☐ / ☒	
4	National Park	☐ / ☒	
5	Designated Federal Wilderness Area	☐ / ☒	
6	Areas identified under the Coastal Zone Management Act	☐ / ☒	
7	Sensitive Areas identified under the National Estuary Program or Near Coastal Waters Program	☐ / ☒	
8	Critical areas identified under the Clean Lakes Program	☐ / ☒	
9	National Monument	☐ / ☒	
10	National Seashore Recreational Area	☐ / ☒	
11	National Lakeshore Recreational Area	☐ / ☒	
12	Habitat known to be used by Federal designated or proposed endangered or threatened species	☐ / ☒	Federal candidate species identified for Owyhee County however range lacks habitat to support species.
13	National preserve	☐ / ☒	
14	National or State Wildlife Refuge	☐ / ☒	
15	Unit of Coastal Barrier Resources System	☐ / ☒	
16	Coastal Barrier (undeveloped)	☐ / ☒	
17	Federal land designated for protection of natural ecosystems	☐ / ☒	
18	Administratively Proposed Federal Wilderness Area	☐ / ☒	
19	Spawning areas critical for the maintenance of fish/shellfish species within river, lake, or coastal tidal waters	☐ / ☒	
20	Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which fish spend extended periods of time	☐ / ☒	
21	Terrestrial areas utilized for breeding by large or dense aggregations of animals	☐ / ☒	

Table 2 (Cont.)

	Criteria	Yes / No	Comments
22	National river reach designated as Recreational	☐ / ☒	
23	Habitat known to be used by state designated endangered or threatened species	☐ / ☒	State threatened and candidate species identified for Owyhee County however range lacks habitat to support species.
24	Habitat known to be used by species under review as to its Federal endangered or threatened status	☐ / ☒	
25	Coastal Barrier (partially developed)	☐ / ☒	
26	Federally designated Scenic or Wild River	☐ / ☒	
27	State land designated for wildlife or game management	☐ / ☒	
28	State-designated Scenic or Wild River	☐ / ☒	
29	State-designated Natural Areas	☐ / ☒	
30	Particular areas, relatively small in size, important to maintenance of unique biotic communities	☐ / ☒	
31	State-designated areas for protection or maintenance of aquatic life	☐ / ☒	
32	Wetlands	☐ / ☒	
33	Fragile landscapes, land sensitive to degradation if vegetative habitat or cover diminishes	☐ / ☒	

a – Based on EPA, 1990, 55 FR 51624, Table 4-23 – Sensitive Environments Rating Values, Dec. 14, 1990; EPA, 1997, ERAGS, Exhibit 1-1 List of Sensitive Environments

Table 3
Proposed Sampling Approach
Mountain Home AFR No. 1

AOC	Location to be Sampled	Total Number of Samples	Media to be Sampled (Number of Samples)			MC of Concern		MEC Survey to be Conducted?	Comments
			Surface Soil	Sediment	Surface Water	Explosives and Metals (Number of Samples)			
						Soil/Sed	Water		
1	Bombing Range	10	8	1	1	9	1	Yes	One MIS for soil will be collected from each of the five MIS decision units. Up to three additional ad hoc MIS soil samples will be collected if areas of distinct soils are observed. Water and sediment samples are to be collected, downgradient, along Vinson Wash
	Background	3	1	1	1	2	1	Yes	One soil MIS background sample is to be collected. One upgradient surface water and one sediment sample are to be collected.
Sample Totals		**13**	**9**	**2**	**2**	**11**	**2**		
Quality Control Samples						2	1		
Total Samples to be Analyzed						**13**	**3**		

AOC = area of concern
MIS = multi-increment sampling

Table 4

Human Health Screening Criteria for Soil and Sediment at Idaho Sites[a]

Mountain Home AFR No. 1

Analyte	Abbreviation	CAS No.	Region 9 Human Health Screening Values				Idaho IDTL for Soil[d] (mg/kg)
			Residential PRG[b] (mg/kg)	Industrial PRG[b] (mg/kg)	SSLs[c] DAF=1 (mg/kg)	SSLs[c] DAF=20 (mg/kg)	
Hexahydro-1,3,5-trinitro-1,3,5-triazine	RDX	121-82-4	4.4	16			
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	HMX	2691-41-0	3,100	31,000			
2,4,6-Trinitrotoluene	2,4,6-TNT	118-96-7	16	57			0.0134
1,3,5-Trinitrobenzene	1,3,5-TNB	99-35-4	1,800	18,000			
1,3-Dinitrobenzene	1,3-DNB	99-65-0	6.1	62			
2,4-Dinitrotoluene	2,4-DNT	121-14-2	0.72[e]	2.5[e]	0.00004	0.0008	0.00029
2,6-Dinitrotoluene	2,6-DNT	606-20-2	0.72[e]	2.5[e]	0.00004	0.0008	0.00021
2-Amino-4,6-dinitrotoluene	2-Am-DNT	35572-78-2	12	120			
2-Nitrotoluene	2-NT	88-72-2	0.88	2.2			
3-Nitrotoluene	3-NT	99-08-1	730	1,000			
4-Amino-2,6-dinitrotoluene	4-Am-DNT	19406-51-0	12	120			
4-Nitrotoluene	4-NT	99-99-0	12	30			
Nitrobenzene	NB	98-05-3	20	100	0.007	0.1	0.0218
Nitroglycerin	NG	55-63-0	35	120			
Methyl-2,4,6-trinitrophenylnitramine	Tetryl	479-45-8	610	6,200			
Pentaerythritol tetranitrate	PENT	78-11-5					
Antimony	Sb	7440-36-0	31	410	0.30	5	4.77
Copper	Cu	7440-50-8	3,100	41,000			921
Lead	Pb	7439-92-1	400	800			49.6
Zinc	Zn	7440-66-6	23,000	100,000	620	12,000	886

DAF = Dilution Attenuation Factor
IDTL = Initial Default Target Level
mg/kg = milligrams per kilogram
PRG = Preliminary Remediation Goal
SSL = Soil Screening Level

[a] If laboratory cannot meet any of the Practical Quantitation Limits (PQLs) with routine SW-846 methodology (as supported by Method Detection Limits that are no greater than 1/3 PQL), laboratory's PQL must be identified in laboratory submittal as failing to meet the PQL. Some screening values cannot be obtained with routine methodology to the PQL. In those cases, the PQL achievable with a routine SW-846 methodology would be accepted.

[b] PRGs from Region 9 PRG Table dated October 2004 and addendum dated 28 December 2004, based on single chemical.

[c] SSLs from Region 9 PRG Table dated October 2004 and revision note dated 28 December 2004.

[d] Idaho Initial Default Target Levels for Soil from *Idaho Risk Evaluation Manual* , Appendix A, dated July 2004, based on single chemical. In addition, values are based on groundwater protection via soils leaching to groundwater unless otherwise noted.

[e] Carcinogenic DNT mixture values used if more conservative than noncarcinogenic isomer-specific values.

Table 5

Human Health Screening Criteria for Surface Water at Idaho Sites[a]

Mountain Home AFR No. 1

			Region 9 Tap Water PRG[b] (µg/L)	Federal Ambient Water Criteria for Consumption of:		Idaho Surface Water Standards	
				Water and Organism[c] (µg/L)	Organism Only[c] (µg/L)	Water and Organism[d] (µg/L)	Organism Only[d] (µg/L)
Hexahydro-1,3,5-trinitro-1,3,5-triazine	RDX	121-82-4	0.61				
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	HMX	2691-41-0	1,800				
2,4,6-Trinitrotoluene	2,4,6-TNT	118-96-7	2.2				
1,3,5-Trinitrobenzene	1,3,5-TNB	99-35-4	1,100				
1,3-Dinitrobenzene	1,3-DNB	99-65-0	3.6				
2,4-Dinitrotoluene[e]	2,4-DNT	121-14-2	0.099	0.11	3.4	0.11	9.1
2,6-Dinitrotoluene[e]	2,6-DNT	606-20-2	0.099				
2-Amino-4,6-dinitrotoluene	2-Am-DNT	35572-78-2	7.3				
2-Nitrotoluene	2-NT	88-72-2	0.049				
3-Nitrotoluene	3-NT	99-08-1	120				
4-Amino-2,6-dinitrotoluene	4-Am-DNT	19406-51-0	7.3				
4-Nitrotoluene	4-NT	99-99-0	0.66				
Nitrobenzene	NB	98-05-3	3.4	17	690[f]	17	1,900
Nitroglycerin	NG	55-63-0	4.8				
Methyl-2,4,6-trinitrophenylnitramine	Tetryl	479-45-8	360				
Pentaerythritol tetranitrate	PETN	78-11-5					
Antimony	Sb	7440-36-0	15	5.6	640	14	4,300
Copper	Cu	7440-50-8	1,500	1,300[f]			
Lead	Pb	7439-92-1					
Zinc	Zn	7440-66-6	11,000	7,400[f]	26,000[f]		

PRG = Preliminary Remediation Goal
µg/L = micrograms per liter

[a] If laboratory cannot meet these Practical Quantitation Limits (PQLs) with routine SW-846 methodology (as supported by Method Detection Limits that are no greater than 1/3 PQL), laboratory's PQL must be identified in laboratory submittal as failing to meet the PQL. Some screening values cannot be obtained with routine methodology to the PQL.

[b] Region 9 PRG Table dated October 2004 and revision note dated 28 December 2004, based on single chemical.

[c] National Recommended Water Quality Criteria, U.S. Environmental Protection Agency, Office of Water, 2006. These constituents are considered priority pollutants unless indicated otherwise.

[d] Surface Water Standards from Idaho Risk Evaluation Manual, Table 3-5, dated July 2004, based on single chemical.

[e] Carcinogenic DNT mixture values used if more conservative than noncarcinogenic isomer-specific values.

[f] The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.

Draft Worksheets

Site Information Worksheet
MRSPP Data Gaps
HRS Data Gaps

Site Information Worksheet

Site: **Mountain Home AFR No. 1**

Project: **FUDS**

Item	Site Information Needed[a]	Suggested Means to Obtain Site Information	Potential Source(s) of Site Information	Responsible for Obtaining	Deadline for Obtaining Site Information
1	Recheck - Areas of cultural significance within AOC	Phone/Letter	SHPO	Shaw	(Waiting for response from SHPO) For inclusion in Final TPP Memo

[a]Refer to EM 200-1-2, Paragraphs 1.1.3 and 2.2.

Munitions Response Site Prioritization Protocol (MRSPP) Data Gaps
32 CFR Part 179

Installation: Mountain Home Air Force Range No. 1
AOC: Bombing Range
RMIS Range ID: F10ID014001R01

Module	Table No.	Table Description	Data Gap	Potential Source of Information to Fill Data Gap	No Data Gap	Description of Known Data
Explosive Hazard Evaluation (EHE)	1	Munitions Type			x	Practice Bombing Range using M38A2 practice bombs and an AN-M100 series bomb tail fuse associated with 100-lb GP bombs (AN-M30)
	2	Source of Hazard			x	Former practice range
	3	Location of Munitions			x	Munition debris observed on surface of range
	4	Ease of Access			x	No barrier
	5	Status of Property			x	Non-DoD control
	6	Population Density			x	0 inhabited structures within 2 miles
	7	Population Near Hazard			x	US Census, air photos, maps
	8	Activities/Structures			x	Agricultural - livestock grazing
	9	Ecological and/or Cultural Resources			x	Ecological resources present (Candidate Species)
	10	**EHE Module Score**			**x**	60 to 70 EHE Rating D (Preliminary)
Chemical Warfare Materiel (CWM) Hazard Evaluation (CHE)	11	CWM Configuration			x	Historical evidence indicates that CWM are not present
	12	Sources of CWM			x	Historical evidence indicates that CWM are not present
	13	Location of CWM			x	Historical evidence indicates that CWM are not present
	14	Ease of Access			x	No barrier
	15	Status of Property			x	Non-DoD control
	16	Population Density			x	< 100 persons per square mile
	17	Population Near Hazard			x	0 inhabited structures within 2 miles
	18	Activities/Structures			x	Agricultural - livestock grazing
	19	Ecological and/or Cultural Resources			x	Ecological resources present
	20	**CHE Module Score**			**x**	< 38 CHE Rating G (Preliminary)
Health Hazard Evaluation (HHE)	21	Groundwater	x	Contaminant hazard evaluation pending analytical results		
	22	Surface Water (Human Endpoint)	x	Contaminant hazard evaluation pending analytical results		
	23	Sediment (Human Endpoint)	x	Contaminant hazard evaluation pending analytical results		
	24	Surface Water (Ecological Endpoint)	x	Contaminant hazard evaluation pending analytical results		
	25	Sediment (Ecological Endpoint)	x	Contaminant hazard evaluation pending analytical results		
	26	Surface Soil	x	Contaminant hazard evaluation pending analytical results		
	27	Supplemental Contaminant Hazard	x	Contaminant hazard evaluation pending analytical results		
	28	**HHE Module Score**	**x**	**Evaluation pending filling of data gaps**		
MRS Priority	**29**	**MRS Priority (Based on Highest Hazard Evaluation Module Rating)**	**x**	**Evaluation pending filling of data gaps**		
	A	**MRS Background Information**	**x**	**Evaluation pending filling of data gaps**		

Mountain Home AFR No. 1 HRS Data Gaps [a]

Item	Number	Comment – Missing Data Element
1	1.8	Confirm the latitude / longitude of potential source(s) and the accuracy of the information (in meters).

[a] Information required to complete the MEC-HRS data collection form.